AN IDENTIFICATION SYSTEM FOR COMMON DEMOSPONGIAE OF THE SÃO SEBASTIÃO CHANNEL AREA, SW ATLANTIC, DEVELOPED WITH THE LINNAEUS II SOFTWARE

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ABSTRACT

Created for the management of data in multimedia, the software Linnaeus II has been used here for the preparation of a CD-ROM with a main objective: a tool for the identification of Porifera. Twenty-five species among the most conspicuous occurring in the São Sebastião Channel area were selected. For each species it is supplied: a description of the external and internal morphology, ecology, literature, list of specimens in the collection of the Museu Nacional/UFRJ and distribution in the São Sebastião Channel, in Brazil and in the world. A key for the identification of these species was elaborated allowing to start at different levels, depending on a greater or smaller familiarity of the user with one or another type of character (i.e.: color, form, consistency, spiculation).

KEY WORDS

Taxonomy, biodiversity databases, identification systems, Porifera, Southwestern Atlantic.

INTRODUCTION

The publication of results originating from biodiversity surveys, in a form that best meets the needs of science and society, is one of the missions of the Systematics Agenda 2000 (SYSTEMATICS AGENDA 2000, 1994). Multimedia systems, such as CD-ROMs and sites in the Internet are greatly adjusted to such goals, by allowing the propagation of great amounts of information at low cost (VAN SOEST *et al.,* 1996). Created for the management of data in multimedia, the software Linnaeus II (ETI, University of Amsterdam/UNESCO) has been used here for the elaboration of a CD-ROM with two main objectives: 1) aid in basic education concerning the Phylum Porifera (high school and university - the Portuguese language was chosen as more appropriate for a product of regional interest only), and 2) tool for the identification of Porifera, which will be presented here. The São Sebastião Channel area has been chosen in view of: 1) São Paulo State's over 50 % share of all research conducted in Brazil, 2) location in the Channel of Brazil's largest tankers facility and associated intermittent chemical stress, 3) urban development pressure, and 4) marine biological laboratory facilities at the shore (HAJDU *et al.,* 1999).

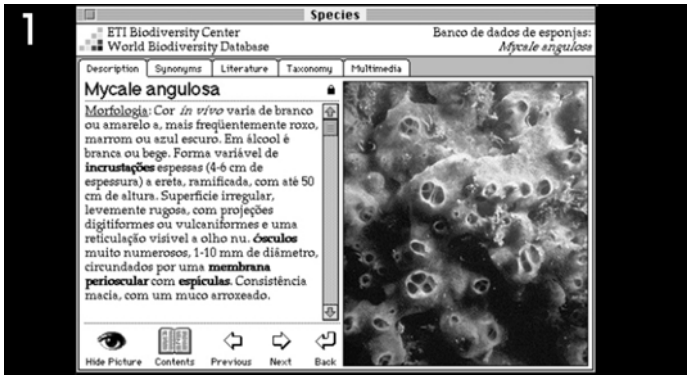

Fig. 1. Species card with description of the external morphology of *Mycale angulosa*.

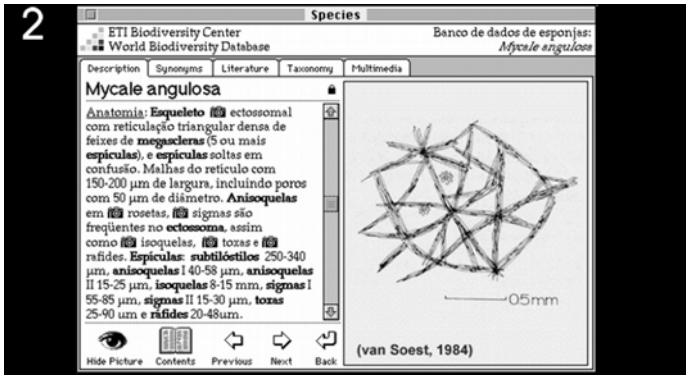

Fig. 2. Species card with description of the internal morphology of *Mycale angulosa*.

Fig. 3. Literature card with references for *Mycale angulosa*.

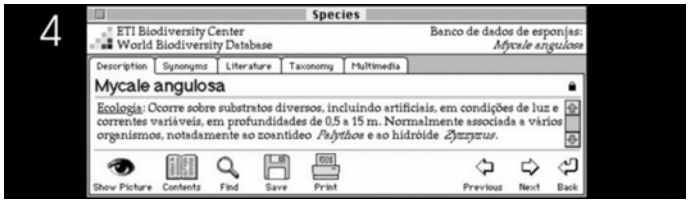

Fig. 4. Species card with the ecology of *Mycale angulosa*.

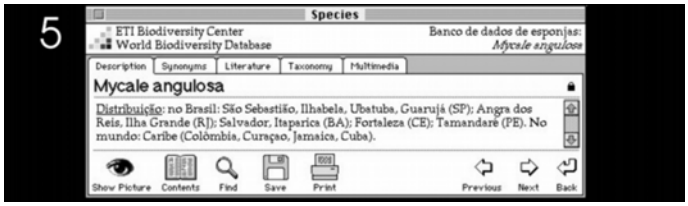

Fig. 5. Distribution list of *Mycale angulosa* in Brazil and elsewhere.

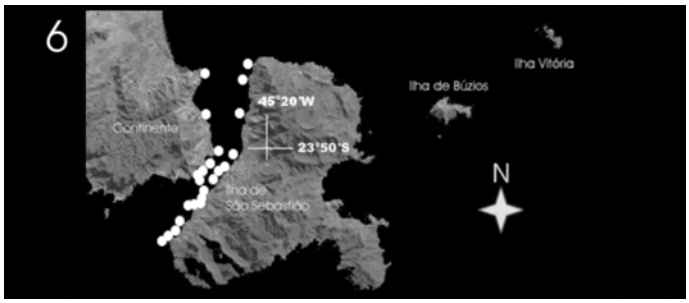

Fig. 6. Distribution of *Mycale angulosa* in the São Sebastião Channel, SP, Brazil.

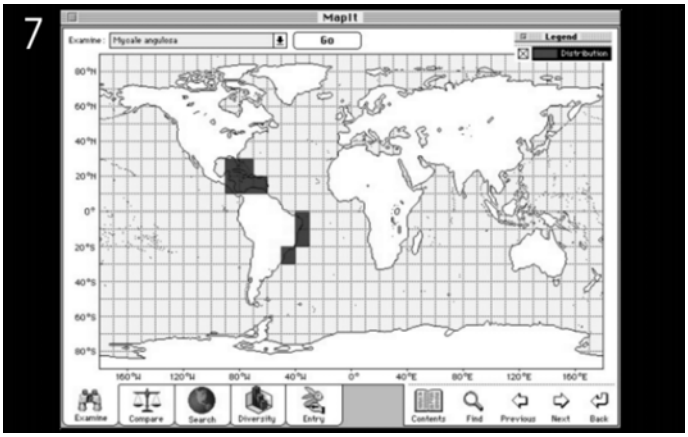

Fig. 7. MapIt™ card with distribution of *Mycale angulosa* in the world's oceans.

MATERIAL AND METHODS

The São Sebastião Channel is located in the northern coastline of São Paulo State between the cities of Ilhabela and São Sebastião. It is located between latitudes 23º41' - 23º53'05" S and longitudes 45º19' - 45º30' W, with over 20 km of extension between São Sebastião Island and the continent. Its width is approximately 7 km on its southern end, 6 km in the north and 2 km in its central, narrowest portion (SCHAEFFER-NOVELLI, 1990). Crossed by the Tropic of Capricorn, it is situated on the boundary between tropical and subtropical zones. It is the rainiest area in the country, due to the complex interplay between tropical and polar systems. Species descriptions were compiled from the literature, from unpublished manuscripts (e.g. thesis), and/or were newly generated (*Chondrosia* aff. *reniformis* and *Tetilla radiata*). Photographs were digitalized by scanner or PhotoCD (Kodak) with a resolution of 72 dpi. Distributions in the São Sebastião Channel were assembled from 39 stations visited. Distributions in Brazil were compiled from the literature. Distributions elsewhere were obtained from an unpublished database by Rob W.M. van Soest. The identification protocol was constructed from a matrix of species by characters. The Linnaeus II software comprises a set of interlincked databases for organization of data on species descriptions and distributions (*e.g.* Introduction, Glossary, Species Cards, Higher Taxa, Identify-It ™, Map-It ™; cf. VAN SOEST *et al.,* 1996).

RESULTS

Twenty-five species amongst the most conspicuous occurring in the São Sebastião Channel were selected: 1) *Amphimedon viridis* Duchassaing & Michelotti, 1864; 2) *Aplysina caissara* Pinheiro & Hajdu, 2001; 3) *A. fulva* (Pallas, 1766); 4) *Axinella* aff. *corrugata* (Wilson, 1902); 5) *Chondrilla* aff. *nucula* Schmidt, 1862; 6) *Chondrosia* aff. *reniformis* Nardo, 1847; 7) *Cinachyrella alloclada* Uliczka, 1929; 8) *Clathria campecheae* Hooper, 1996; 9) *Cliona* aff. *celata* Grant, 1826; 10) *Dragmacidon reticulatus* (Ridley & Dendy, 1886); 11) *Geodia corticostylifera* Hajdu *et al.*, 1992; 12) *Halichondria cebimarensis* Carvalho & Hajdu, 2001; 13) *Haliclona melana* Muricy & Ribeiro, 1999; 14) *Hymeniacidon heliophila* Parker, 1910; 15) *Mycale* aff. *americana* van Soest, 1984; 16) *M. angulosa* (Duchassaing & Michelotti, 1864); 17) *M. laxissima* (Duchassaing & Michelotti, 1864); 18) *M. magnirhaphidifera* van Soest, 1984; 19) *M. microsigmatosa* Arndt, 1927; 20) *Petromica citrina* Muricy *et al.*, 2001; 21) *Polymastia janeirensis* (Boury-Esnault, 1973); 22) *Protosuberites aurantiacus* (Duchassaing & Michelotti, 1864); 23) *Scopalina ruetzleri* (Wiedenmayer, 1977); 24) *Tedania ignis* (Duchassaing & Michelotti, 1864) and 25) *Tetilla radiata* Selenka, 1879. For each species, the following data were supplied: a description of the external (Fig. 1) and internal morphology (Fig. 2), literature (Fig. 3), its ecology (Fig. 4), list of specimens in the collection of Museu Nacional/UFRJ, list of occurrences in Brazil and elsewhere (Fig. 5), maps showing localities of occurrence in the São Sebastião Channel (Fig. 6) and in the world (Fig. 7). The Identify-It ™ file associated to a glossary of technical terms, allows a moderately inexperienced user to select from a series of characters which ones he is more familiar with, starting thus the identification process. The program attaches a probability to likely identifications, which are then analyzed in detail by returning to the full species description, prior to considering a sample actually identified. This system can be transported to paper as a multientry key where species are assigned to character states. Identification is reached after selection of that species which occurs on all or the largest set of character states, and thorough analysis of its description.

Ideally, sub-optimal species should also be scrutinized. Following is the multientry key generated from our Identify-It ™ files.

A copy version of this identification system is enclosed in the proceedings CD ROM.

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